



CMIA
PRINTING

CANADIAN PRINTING INK MANUFACTURERS ASSOCIATION

SOLVING “HEAVY METAL” COMPLIANCE

The term “heavy metals” has been used as a group name for metals and semi-metals that have been associated with contamination and potential toxicity or ecotoxicity. There is no standard regulatory definition of “heavy metal”. Some regulations list the applicable “heavy metals” of concern, others do not. Many times the list of “heavy metals” differs from one regulation to the next.

When North American customers request “heavy metal” compliance, they are usually referring to C.O.N.E.G’s Toxic in Packaging Legislation, the ASTM Standard Consumer Safety Specification on Toy Safety F 963 (ASTM F 963-03), or the European Standard EN 71-3:1994/A1:2000.

C.O.N.E.G. legislation is designed to phase out the use and presence of mercury, lead, cadmium and hexavalent chromium in packaging. The total of the four metals is not to be greater than 100 ppm. The European version of this legislation is 94/62/EC Directive on Packaging and Packaging Waste.

The “Toy Standards” -- ASTM F963 and EN71-- identify possible hazards that may not be readily recognized by the public, and that may be encountered in the normal use for which a toy is intended or after reasonably foreseeable abuse. These standards include restrictions on the soluble levels of Antimony, Arsenic, Barium, Cadmium, Chromium, Mercury, Selenium and total Lead in surface coating materials used for toys. The ISO Global Toy Standard (IS 8124-3) also addresses these elements. The incidental (i.e. contaminant) soluble levels for these eight specific elements in surface coating materials must not exceed the limits outlined below:

Element	ASTM F963-03	EN71-3 1994	IS 8124-3: 1997
Lead	90 mg/kg	90 mg/kg	90 mg/kg
Antimony	60 mg/kg	60 mg/kg	60 mg/kg
Arsenic	25 mg/kg	25 mg/kg	25 mg/kg
Barium	1000 mg/kg	1000 mg/kg	1000 mg/kg
Cadmium	75 mg/kg	75 mg/kg	75 mg/kg
Chromium	60 mg/kg	60 mg/kg	60 mg/kg
Mercury	60 mg/kg	60 mg/kg	60 mg/kg
Selenium	500 mg/kg	500 mg/kg	500 mg/kg

Depending on where the final consumer lives, the toy related coating materials must also comply with:

1. U.S. Federal Code of Regulations section 16 CFR 1303 - *Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint*; (<http://www.access.gpo.gov/nara/cfr/waisidx/cfr-table-search.html>) or
2. Canadian Hazardous Products Act, Chapter H-3, Schedule 1 restricting the amount of Lead, antimony, arsenic, barium, cadmium, mercury, and selenium present in the decorative or protective coating of toys, equipment and other products for use by a child in learning or play.

Seven of these eight elements are rarely, if ever, used in printing ink formulations. Barium, however, is a component of warm red and other pigments that may be used in spot colours. It is therefore important for the printer to specify Barium-free inks when printing children's toys or packaging.

Compliance with the above regulations and standards will not guarantee compliance with Brand owners restricted materials guidelines. These internally developed guidelines include materials that may not currently be subjected to regulatory control. For example, one Brand owner prohibits the use of molybdenum containing pigments, another prohibits the use of certain benzidine yellows. To ensure that the ink meets the customer's requirements, the printer should provide the ink manufacturer with the relevant guidelines.

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